

REV. 4/97  
For Other Than A Small Entity

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. GC/7982ACIPCON

Anticipated Classification  
of this application:  
Class 30 Subclass 41

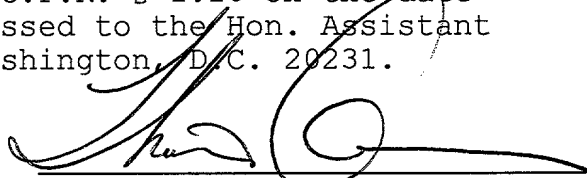
Prior application:  
Examiner Charles Goodman  
Art Unit 3204

EXPRESS MAIL CERTIFICATION

"Express Mail" mailing label number EG353682587US.

Date of Deposit Sept. 10, 1997.

I hereby certify that this transmittal letter and the other papers and fees identified in this transmittal letter as being transmitted herewith are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above and is addressed to the Hon. Assistant Commissioner for Patents, Washington, D.C. 20231.



THOMAS QUINONES

Box PATENT APPLICATION  
Hon. Assistant Commissioner  
for Patents  
Washington, D.C. 20231

New York, New York  
Sept. 10, 1997

TRANSMITTAL LETTER FOR  
RULE 60 CONTINUATION APPLICATION

Sir:

This is a request for filing a ☒ continuation,  
☐ divisional, application under 37 C.F.R. § 1.60, of pending  
prior Application No. 08/461,318, filed on June 20, 1995  
for SHAVING SYSTEM.



2007-09-10 09:10:00

1. ☒ Enclosed is a copy of the prior application, including the oath or declaration as originally filed and the undersigned registered attorney hereby states that these application papers comprise a true copy of the prior application as filed.
2. ☐ Cancel in this application original claims \_\_\_\_\_ of the prior application before calculating the filing fee.
3. ☒ The filing fee is calculated below:

CLAIMS AS FILED IN THE PRIOR APPLICATION, LESS ANY CLAIMS CANCELLED IN PARAGRAPH 2				
FOR	NUMBER FILED	NUMBER EXTRA	RATE	FEE
BASIC FEE				\$ 770.00
TOTAL CLAIMS	19	- 20 =	X \$22 =	\$
INDEPENDENT CLAIMS	3	- 3 =	X \$80 =	\$
[ ] MULTIPLE DEPENDENT CLAIMS			+ \$260 =	\$
TOTAL				<u>\$ 770.00</u>

4. ☐ Please charge \$\_\_\_\_\_ to Deposit Account No. 06-1075 in payment of the filing fee. A duplicate copy of this transmittal letter is transmitted herewith.
5. ☒ A check in the amount of \$ 770.00 in payment of the filing fee is transmitted herewith.
- 5a. ☐ This application is being filed unaccompanied by a filing fee. The appropriate filing fee will be paid in response to a Notice to File Missing Parts, pursuant to 37 C.F.R. § 1.53(d).

6. ☒ The Commissioner is hereby authorized to charge payment of any additional filing fees required under 37 C.F.R. § 1.16, in connection with the paper(s) transmitted herewith, or credit any overpayment of same, to Deposit Account No. 06-1075. A duplicate copy of this transmittal letter is transmitted herewith.
7. ☐ Amend the specification by inserting before the first line the sentence: -- This is a ☐ continuation, ☐ division, of application Serial No. \_\_\_\_\_, filed \_\_\_\_\_, entitled \_\_\_\_\_.
8. ☐ Transfer the drawings from the prior application to this application and abandon said prior application as of the filing date accorded this application. A duplicate copy of this sheet is enclosed for filing in the prior application file.
9. ☐ New formal drawings are enclosed.
10. ☒ Informal drawings are enclosed in order to expedite prosecution of this application. Formal drawings will be filed during the pendency of this application.
11. ☐ Priority of application Serial No. \_\_\_\_\_, filed on \_\_\_\_\_, is claimed under 35 U.S.C. § 119.
- (1) ☐ The certified copy has been filed in prior application Serial No. \_\_\_\_\_, filed \_\_\_\_\_.
- (2) ☐ The certified copy is enclosed.
12. ☒ The prior Application No. 08/461,318, filed June 20, 1995, is assigned of record to The Gillette Company. The assignment is recorded at Reel 7660, Frames 0519-21.

13. [X] The power of attorney in prior Application No. 08/461,318 is to:

Donal B. Tobin, Reg. No. 25,711  
Paul I. Douglas, Reg. No. 31,244  
Edward S. Podszus, Reg. No. 35,983  
Chester Cekala, Reg. No. 32,971  
Stephan P. Williams, Reg. No. 28,546

and associate power of attorney is to:

John E. Nathan, Reg. No. 26,778  
Richard A. Inz, Reg. No. 31,375  
Douglas A. Cardwell, Reg. No. 36,472

- a. [X] The power appears in the original paper in the prior application.
- b. [X] Since the associate powers do not appear in the original papers, copies of the associate powers in the prior application are enclosed.
- c. [ ] Since the undersigned's power does not appear in the original papers, a copy of the undersigned's power in the prior application is enclosed.

14. [X] Address all future communications to:

Richard A. Inz  
Reg. No. 31,375  
c/o FISH & NEAVE  
1251 Avenue of the Americas  
New York, New York 10020-1104  
Tel.: (212) 596-9000

15. [X] A preliminary amendment is enclosed.

Respectfully submitted,



John E. Nathan  
Reg. No. 26,778  
Richard A. Inz  
Reg. No. 31,375  
Douglas A. Cardwell  
Reg. No. 36,472  
Attorneys for Applicant  
c/o FISH & NEAVE  
1251 Avenue of the Americas  
New York, New York 10020-1104  
Tel.: (212) 596-9000

2025-03-10 10:00:00

PATENTS  
GC/7982ACIPCON

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Applicant : Mingchih M. Tseng  
Application No. : Not yet assigned  
Filed : Herewith  
For : SHAVING SYSTEM  
Anticipated  
Group Art Unit : 3204  
Anticipated  
Examiner : Charles Goodman

New York, New York  
Sept. 10, 1997

Box PATENT APPLICATION  
Hon. Assistant Commissioner  
for Patents  
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination of this application, please amend  
the application as follows:

In the Drawings

Please substitute new informal drawing sheet 4,  
enclosed, in which FIG. 9 has been modified.

200160-67892580

EG353682587US

In the Specification

On page 1, line 10, after "is" add -- a continuation of U.S. Application No. 08/461,318, filed June 20, 1995, which is --.

On page 1, line 11, after "1994" add -- , now abandoned --.

On page 2, line 7, change "system" to -- systems --.

On page 2, line 14, after the word "shaving", add -- agent --.

On page 2, line 24, change "defines having" to -- define a shaving --.

On page 2, line 25, after "sheath" add -- (or skin engaging layer) -- .

On page 2, line 26, delete both occurrences of "material", and after "core" add -- (or non-skin engaging layer) --.

On page 2, line 27, delete "material", and change "said" to -- the --.

On page 2, line 34, delete "material".

On page 3, line 12, change "perspective" to -- sectional --.

On page 3, line 19, change "FIG." to -- FIGS. --.

On page 3, line 20, change "geometry's" to -- geometries --.

On page 3, line 22, change "yet another cross-sectional depiction;" to -- a cross-sectional view of the skin engaging member of Fig. 1; and --.

On page 3, line 30, after "unit" add -- (or razor cartridge) --.

On page 4, line 7, after "unit" add -- (or razor cartridge) --.

On page 4, line 10, change "insert" to -- skin engaging --.

On page 4, line 13, change "FIG's. 4-9" to -- FIGS. 4-8 --, and delete "in".

On page 4, line 16, change "FIG's." to -- FIGS. --.

On page 4, line 18, delete "material 13", change "FIG's." to -- FIGS. --, and change "sheaths" to -- the sheath --.

On page 4, line 21, change "an" (first occurrence) to -- a --.

On page 4, line 22, change "element" to -- member --.

On page 4, line 23, after "opening" add -- 66 --.

On page 4, line 24, delete the first occurrence of "material", and change the second occurrence of "material" to -- 72 --.

On page 4, line 25, delete both occurrences of "material", after "of" add -- a --.

On page 4, line 27, delete "material", and after "weight" add a comma.

On page 4, line 28, after "15%" add a comma, and delete "material".

On page 4, line 29, after "the" add -- water soluble --, after "aid" add a comma, and change "material" to -- shaving aid --.

On page 4, line 30, after "insoluble" add -- polymers for the --, delete "materials", and after "include" add a comma.

On page 4, line 31, change "polyacetyl" to -- polyacetal --.

On page 4, line 32, change "aid material" to -- aids -- .

On page 4, line 33, change "imidazonline" to -- imidazoline --.

On page 4, line 36, after "combinations." add -- The examples illustrate sheaths comprising from 65% to 82% polyethylene oxide. --.

On page 5, line 17, delete both occurrences of "material".

On page 5, line 18, change "being" to -- are --.

On page 5, line 22, delete "material".

On page 5, line 23, delete "material".

On page 5, line 25, delete "material".

On page 5, line 27, delete "material".

On page 5, line 30, delete "material".

On page 5, line 32, change "insoluble" to  
-- soluble --.

On page 5, line 33, delete "material", and change  
"non-water soluble plastic resin" to -- water insoluble  
polymer --.

On page 5, line 34, change "non-water soluble plastic  
resin" to -- water insoluble polymer --.

On page 5, line 35, change "resins" to -- polymers --.

On page 6, line 2, change "polyhydroxyethle  
methacrylate," to -- polyhydroxyethylmethacrylate --.

On page 6, line 3, change "Core material suitable"  
to -- Suitable water insoluble polymers --, and change "present  
invention" to -- core --.

On page 6, line 4, after "blends" add -- thereof --.

On page 6, line 7, delete "material".

On page 6, line 8, change "CaCo<sub>3</sub>" to -- CaCO<sub>3</sub> --.

On page 6, line 10, change "thereof.." to  
-- thereof. --.

On page 6, line 13, delete both occurrences of  
"material".

On page 6, line 14, change "material over" to  
-- at --.

On page 6, line 15, after "off" add -- (or eroded) --

On page 6, line 16, change "and" to -- an --.

On page 6, line 18, delete "material", and after "of" add -- a --.

On page 6, line 20, change "FD&C #2" to -- FD&C Blue No. 2 --.

On page 6, line 22, change "Tartozine" to -- Tartrazine --.

On page 6, line 26, delete "material", and delete the comma.

On page 6, line 27, delete "material".

On page 6, line 28, change "74 still" to -- 74. Still --.

On page 6, line 32, change "9" to -- 8 --.

On page 6, lines 31-32, delete the sentence.

On page 6, line 35, change "are" to -- is --.

On page 7, line 1, delete "a".

On page 7, line 4, change "10" to -- 9 --.

On page 7, line 5, after "material" add -- 80 --.

On page 7, line 6, change "51" to -- 81 --.

On page 7, line 7, change "52" to -- 82 --, change "53" to -- 83 --, and after "material" add -- 86, which has been fed into sheath inlet port 84, --.

On page 7, line 9, change "than" to -- then --, and change "55" to -- 85 --.

On page 7, line 14, change "Levi" to -- Levy --.

On page 8, first line of the table, change "Material" (both occurrences) to -- Composition --.

On page 8, in Example No. 1, third column, change "polystyrene 10%" to -- 10% polystyrene --, change "polyethylene oxide 76%" to -- 76% polyethylene oxide --, change "polyvinyl acetate 8%" to -- 8% polyvinyl alcohol --, change "polyethylene glycol 5%" to -- 5% polyethylene glycol --, and change "white pigment 1%" to -- 1% white pigment --.

On page 8, in Example 2, second column, change "25% nylon" to -- 75% nylon --.

On page 8, in Example 2, third column, change "5% polyvinyl acetate" to -- 5% polyvinyl alcohol --.

On page 8, in Example 3, third column, change "1% polyvinyl acetate" to -- 1% polyvinyl alcohol --.

On page 8, in Example 4, third column, change "4% polyvinyl acetate" to -- 4% polyvinyl alcohol --.

On page 8, in Example 5, third column, change "5% polyvinyl acetate" to -- 5% polyvinyl alcohol --.

On page 8, in Example 6, third column, change "10% polyvinyl acetate" to -- 10% polyvinyl alcohol --.

On page 8, in Example 7, third column, change "15% polyvinyl acetate" to -- 15% polyvinyl alcohol --.

On page 8, in Example 8, third column, change "14% polyvinyl acetate" to -- 14% polyvinyl alcohol --.

On page 8, in Example 9, third column, change "20% polyvinyl acetate" to -- 20% polyvinyl alcohol --.

On page 8, in Example 10, third column, change "13% polyvinyl acetate" to -- 13% polyvinyl alcohol --.

On page 8, in Example 11, third column, change "15% polyvinyl acetate" to -- 15% polyvinyl alcohol --.

On page 8, in Example 12, third column, change "10% polyvinyl acetate" to -- 10% polyvinyl alcohol --.

On page 9, line 1, change "12" to -- 13 --.

On page 9, lines 12-13, change "ethlyene oxide/styrene" to -- polyethylene oxide --.

On page 9, line 14, change "180C" to -- 180 °C --, and change "oxide/styrene" to -- oxide blend --.

At page 9, line 15, change "polystryene/white" to -- polystyrene/white --.

On page 9, line 17, change "be" to -- are --.

On page 9, line 18, change "continuos" to -- continuous --.

#### In the Abstract

Line 1, change "In accordance with one aspect of the invention, there is provided a" to -- A --.

Line 3, delete "is described herein".

Line 15, change "defines having geometry" to -- define a shaving geometry --.

Line 16, after "sheath" add -- (or skin engaging layer) --.

Line 17, delete both occurrences of "material", and after "core" add -- (or non-skin engaging layer) --.

Line 18, delete "material".

#### REMARKS

The amendments to the drawings, specification and abstract set forth the amendments made during prosecution of applicant's Application No. 08/461,318, filed June 20, 1995 ("the '318 application"), of which this application is a continuation. These amendments are set forth in applicant's March 10, 1996 Preliminary Amendment, June 12, 1996 Preliminary Amendment, October 17, 1996 Third Preliminary Amendment, January 28, 1997 Amendment And Response To Office Action, and July 9, 1997 Response To Office Action And Amendment Pursuant To

37 C.F.R. § 1.116, all submitted in the '318 application. These amendments do not introduce new matter.

Respectfully submitted,



---

John E. Nathan  
Registration No. 26,778  
Richard A. Inz  
Registration No. 31,375  
Douglas A. Cardwell  
Registration No. 36,472  
Attorneys for Applicant  
c/o FISH & NEAVE  
1251 Avenue of the Americas  
New York, New York 10020

## SHAVING SYSTEM

Mingchih M. Tseng

### BACKGROUND OF THE INVENTION

10 This application is a continuation-in-part of U.S. Serial No. 08/269,495, filed July 1, 1994.

#### 1. Field of the Invention

15 This invention relates to an improved skin engaging member for use in razor blade cartridge assemblies and shaving systems of the wet shave type. The present invention resides broadly in providing the skin engaging cap and/or guard surfaces with configurations which reduce frictional drag of the razor across the skin. This invention also relates to a novel method of manufacturing the skin engaging member of the present invention.

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#### 2. Description of the Prior Art

In shaving systems of the wet shave type, factors such as the frictional drag of the razor across the skin, the force needed to sever hairs, and irritation of pre-existing skin damage can create a degree of shaving discomfort. Discomfort, and other problems accompanying wet shaving systems, can be alleviated by the application of shaving aids to the skin. Shaving aids may be applied prior to, during, or after shaving. A number of problems accompany the use of pre- and post-applied shaving aids. Pre-applied-shaving aids can evaporate or can be carried away from the site of application by repeated strokes of the razor. Post-applied-shaving aids are not present on the skin during shaving and thus their application may be too late to prevent an unwanted affect. Both pre-applied and post-applied shaving aids add additional steps to the shaving process.

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Proposals have been made to incorporate a shaving aid e.g., lubricant, whisker softener, razor cleanser, medicinal agent, cosmetic agent or combination thereof, into a razor, e.g., by depositing a shaving aid in a recess on the razor, by incorporating a shaving aid

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directly into one or more molded polymeric components of the razor, by adhesively securing a shaving aid composite to the razor, and by use of a mechanical connection between a shaving aid composite and the razor. A water-soluble shaving aid, e.g. polyethylene oxide, has been mixed with non-water-soluble material, e.g., a polystyrene polymer, to form an insoluble polymer/soluble shaving aid composite. The composite has been mounted on razor and shaving cartridge structures, adjacent the shaving edge or edges, of single or multiple blade shaving system. Upon exposure to water, the water-soluble shaving aid leaches from the composite onto the skin.

10 Extruded composites with relatively large amounts of shaving agent material (up to 80% by weight) and relatively low amounts of water insoluble matrix material (as little as 20% by weight) are relatively weak and have a tendency towards mechanical failure, both in assembly and in use. Increase in mechanical strength can be obtained with increased amounts of the matrix material. However, such increase reduces the releasability of the shaving material.

## SUMMARY OF THE INVENTION

20 In accordance with one aspect of the invention, there is provided a shaving unit that comprises at least one blade and a skin engaging member that has a surface for engaging the user's skin adjacent the blade edge. The shaving unit may be of a disposable cartridge type adapted for coupling to and uncoupling from a razor handle or may be integral with a handle so that the complete razor is discarded as a unit when the blade or blades become dulled. The blade edge (or edges) cooperate with skin engaging surfaces to defines having geometry.

25 The skin engaging member is comprised of an elongated sheath made of a mixture of water insoluble matrix material and an effective amount of shaving aid material and a rigid core material extending axially through out said sheath. The axial position of the core need not be through the central axis.

30 An object of the present invention is to provide a skin engaging member with improved mechanical strength.

Another object of the present invention is to provide a skin engaging member with improved shaving aid material release characteristics.

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Yet another object of the present invention is to provide a wear indicating skin engaging member.

These and other objects should be evident from the following:

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### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a razor unit in accordance with the invention;

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FIG. 2 is a sectional view taken along the line 2-2 of FIG. 1;

FIG. 3 is a perspective view of another razor unit in accordance with the invention;

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FIG. 4 is an enlarged perspective view of a skin engaging member of the present invention;

FIG. 5 is sectional view taken along the line 3-3 of FIG. 4;

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FIG. 6-7 are sectional views in accordance with FIG. 5 wherein alternate core geometry's are depicted;

FIG. 8 is yet another cross-sectional depiction;

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FIG. 9 is a schematic cross-section diagram of an extrusion die suitable for manufacturing the skin engaging member of FIG. 4.

### DESCRIPTION OF PARTICULAR EMBODIMENTS

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The shaving unit 10 shown in FIGS. 1 and 2 includes base or platform member 12 molded of high impact polystyrene that includes integral coupling groove structure 14 for attachment to a razor handle and guard structure 16 that defines a transversely extending forward skin engaging surface 18. On the upper surface of platform 12 are disposed steel leading blade 20 having a sharpened edge 22, steel following blade 24 having sharpened edge 26, and aluminum spacer member 28 that maintains blades 20 and 24 in spaced relation. Cap member 30 is molded of high impact polystyrene and has body portion 32 that defines skin

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engaging surface 34 that extends transversely between forwardly projecting end walls 36 and has a front edge 38 that is disposed rearwardly of blade edge 26. Integral rivet portions 40 extend downwardly from transversely extending body portion 32 and pass through holes in blades 20 and 24, spacer 28, and platform 12 to secure cap 30, blades 20, 24 and spacer 28 on platform 12. Adhesively affixed to skin engaging surface 34 is skin engaging member 42.

The shaving unit 50 shown in FIG. 3 is of the type shown in Jacobson U.S. Patent 4,586,255 and includes body 52 with front portion 54 and rear portion 56. Resiliently secured in body 52 are guard member 58, leading blade unit 60 and trailing blade unit 62. A shaving aid composite in the form of elongated insert member 64 is frictionally locked in opening 66 of rear portion 56.

FIG's. 4-9 generally depict variations on the present invention. As used in herein, the term "core" refers to an internal portion of a skin engaging member as examined at the cross-section. The core typically runs throughout the skin engaging member along an axis. The axis need not be the central axis. The FIG's. designate the core as 70. Embodiments of the present invention have at least one core element. As used herein, the term "sheath" refers to an outer coating layer(s) over the core material 13. The FIG's. designate sheaths as 72.

Referring now to the drawings, and in particular to FIG. 4, there is shown an elongated skin engaging member 64. The member 64 has a skin engaging surface 74 and an elongated insert element 76. The insert member 76 is designed to frictionally lock in an opening as shown in FIG. 3. The skin engaging member further comprises a rigid core material 70 which is surrounded by a sheath material made of a mixture of water insoluble matrix material and an effective amount of shaving aid material.

The sheath material includes from about 0% to about 30% by weight preferably from about 5% to about 15% of the water insoluble matrix material and from about 70% to about 100% by weight of the shaving aid preferably from about 85% to about 95% material. Suitable water insoluble matrix materials include for example, nylon, ethylene-vinyl acetate copolymer, polyethylene, polypropylene, polystyrene, polyacetyl and combinations. Suitable shaving aid materials include, for example, polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, hydroxypropyl cellulose, polyvinyl imidazonline, polyethylene glycol, polyvinyl alcohol, methylcellulose, starch, water soluble vinyl polymers (Carbopol ® brand sold by B.F. Goodrich), polyhydroxyethylmethacrylate, silicone copolymers, sucrose stearate, vitamin E, panthenol, aloe, essential oils such as menthol and combinations.

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The sheath may include additional components such as: plastisizers, such as polyethylene glycol; beard softeners, such as Kraton G 13 A; additional lubricants, such as silicone oil, Teflon® polytetrafluoroethylene powders (manufactured by DuPont), and waxes; shaving aids, such as menthol, eugenol, eucalyptol, safrol and methyl salicylate; fillers, such as calcium carbonate, mica and fibers; tackifiers such as Hercules Regalrez 1094 and 1126; fragrances; antipruritic/counterirritant materials such as Frescolat; antimicrobial/keratolytic materials such as Resorcinol; anti-inflammatory agents such as Candilla wax and glycyrrhetic acid; astringents such as zinc sulfate; surfactants such as pluronic and iconol materials; compatibilizers such as styrene-b-EO copolymers; and, blowing agents such as Uniroyal Celogen Aznp 130. These additives may leach from the surface to provide improved shaving. These components could be dispersed throughout the sheath or alternatively, a second, outer sheath containing the additional element could be extruded or merely coated over the primary sheath.

The present skin engaging member is produced by a coextrusion process whereby a rigid core material displaces a portion of the sheath material. The nature and relative portions of the sheath and core polymeric materials being such that the skin engaging member has adequate mechanical strength, both as initially produced and after a significant amount of water soluble material has been leached out, the quantity of the water-soluble material being sufficient to provide effective shaving assistance, such as lubrication, for the entire expected life of the blade or blades. The function of the core material is not only to provide additional rigidity but to displace trapped shaving aid material. In conventional skin engaging members, such as those described in U.S. Pat. Nos. 5,063,667; 5,095,619; and 5,113,585, a significant amount of shaving aid material is trapped within the insoluble matrix. By displacing it closer to the skin engaging surface 74, diffusional paths are reduced and more efficient delivery is achieved. Furthermore, the core material provides additional mechanical strength for the attaching mechanism, if used.

The core material must have sufficient mechanical strength and rigidity to provide adequate mechanical strength to the entire skin engaging member, both as initially produced and after a significant amount of water insoluble material has been leached out of the sheath. Preferably, the core material can be made from a non-water soluble plastic resin or a blend consisting of at least about 50% of non-water soluble plastic resin to prevent the core from disintegrating. Water-soluble resins for use in such blends include polyethylene oxide, polyvinyl pyrrolidone; polyacrylamide, hydroxypropyl cellulose, polyvinyl imidazoline,

polyethylene glycol, polyvinyl alcohol, methylcellulose, starch, water-soluble vinyl polymers (Carbopol ® brand sold by B F. Goodrich), polyhydroxyethyl methacrylate, and combinations thereof. Core material suitable for use in the present invention include polystyrene, high impact polystyrene, polypropylene, filled polypropylene, nylon, and blends such as 70% nylon/30% polyethylene oxide, 60% polystyrene/40% polyethylene oxide.

Optionally, the core material can include additives such as lubricants foaming agents, microspheres, baby powders, fillers such as  $\text{CaCO}_3$ , colorants such as  $\text{TiO}_2$  silicone copolymers, sucrose stearate, vitamin E, panthenol, aloe, essential oils, e.g. menthol, and combinations thereof.

In an embodiment of the present invention a wear indicating effect is produced when the sheath material and the core material are made of disparately colored materials (e.g. white colored sheath and blue colored core). Upon use, the sheath material over the skin engaging surface is typically worn off through use. With sufficient use, a second colored region represented by the core is exposed, thus, providing the user with an indication that the shaving unit and/or skin engaging surface have reached their effective life. In a preferred embodiment, the sheath material consists of polyethylene oxide /polystyrene mixture which is white in color and the core consists of nylon and/or styrene which has been colored with a FD&C #2 dye. Other suitable dyes or pigments include FD&C Red No. 40, Erythrosine (FD&C Red No. 3), Brilliant Blue FCF (FD&C Blue No. 1), Indigotine (FD&C Blue No. 2), Tartazine (FD&C Yellow No. 5), Sunset Yellow FCF (FD&C Yellow No. 6) and Fast Green FCF (FD&C Green No. 3) and Titanium Dioxide.

Figure 5 depicts a cross section of an alternate skin engaging member. The core material 70, follows the general contours of the surface defined by the outside of the sheath material. Figure 6 depicts a slight variation on that theme where a thicker sheath layer is provided along the skin engaging surface 74 still further, Figure 7 provides a cross-section wherein a very high degree of sheath material is present along the skin engaging surface.

Figure 8 shows an alternate embodiment wherein the skin engaging member has a triangular cross section. Finally, Figure 9 depicts the skin engaging member depicted in Figures 1 and 2. It is interesting to note that the core in this case provides mechanical strength to the unit yet is not vital to the mechanical locking of the unit. The skin engaging member of Figures 1 and 2 are affixed by adhesive. According to the present invention, the

skin engaging members may be affixed by adhesive such as Loctite Super Bonder 499, mechanical locking mechanism, thermal welds.

5 Figure 10 is a schematic cross section diagram of an extrusion die suitable for manufacturing the skin engaging member of the present invention. Core material is fed into the intrusion die 51 by an extrusion screw, hot melt or other suitable means. In the core inlet port 52 the tight core orifice 53 encounters the sheath material wherein the core becomes encapsulated by the sheath material when viewed in a transverse cross section to the flow of the die material. The encapsulated core then proceeds to the die outlet 55 wherein the continuous skin engaging members can be cured and/or drawn down to provide the appropriate dimensions. Also, it should be noted that the core material could consist of a solid wire or solid plastic material which is fed in through a conventional die to produce an encapsulated skin engaging member. For general discussion of coextrusion technology see Levi, Plastics Extrusion Technology Handbook, Industrial Press Inc., pages 168-188 (1981), incorporated herein by reference. After the continuous skin engaging members are produced, the strand is sent for further processing where it is typically drawn down to the correct size and cut to length suitable for implant into the body of a razor blade cartridge. This cutting can be achieved by knife edge cutting, lasers or water lasers. The skin engaging surfaces of the present invention typically are rectangular in shape with a width of from about 0.05 inches to about 0.1 inches and a length of about 1.2 inches.

Applicant considers equivalent embodiments to be part of the present invention. For example, non-rectangular skin engaging surface areas may be utilized (such as ovals) and non-flat surface patterns could be utilized. These and other equivalent embodiments are also contemplated by the present invention. The present invention and the manner of making and using the same should be evident from the following examples:

#### EXAMPLES

The following samples were coextruded with a cross-section as in FIG. 5.

No.	Core Material	Sheath Material
1	Nylon 70% blue pigment 0.5% polyethylene oxide 29.5%	polystyrene 10% polyethylene oxide 76% polyvinyl acetate 8% polyethylene glycol 5% white pigment 1%
2	25% polyethylene oxide 25% nylon	78% polyethylene oxide 14% polystyrene 3 % polyethylene glycol 5% polyvinyl acetate
3	100% polystyrene	82% polyethylene oxide 14% polystyrene 3% polyethylene glycol 1% polyvinyl acetate
4	70% nylon 29.5% polyethylene oxide 0.5% blue dye	80% polyethylene oxide 16% polystyrene 4% polyvinyl acetate
5	98% polystyrene 2% blue dye	73% polyethylene oxide 5% Salsorb 5% polyvinyl acetate
6	100% polystyrene	74% polyethylene oxide 10% polystyrene 10% polyvinyl acetate 5% polyethylene glycol 1% white TiO2 pigment
7	98% polystyrene 2% blue dye	68% polyethylene oxide 15% polyvinyl acetate 10% polystyrene 5% polyethylene glycol 2% white TiO2 pigment
8	100% polystyrene	67% polyethylene oxide 4% Salsorb 14% polyvinyl acetate 10% polystyrene 4% polyethylene glycol 1% white TiO2 pigment
9	99% polystyrene 1% blue dye	68% polyethylene oxide 20% polyvinyl acetate 10% polystyrene 2% white TiO2 pigment
10	99% polystyrene 1% blue dye	70% polyethylene oxide 13% polyvinyl acetate 15% polystyrene 2% white TiO2 pigment
11	99% polystyrene 1% blue dye	65% polyethylene oxide 15% polyvinyl acetate 15% polystyrene 3% Salsorb 2% white TiO2 pigment
12	99% polystyrene 1% blue dye	65% polyethylene oxide 10% polyvinyl acetate 15% polystyrene 3% Salsorb 2% white TiO2 pigment

### Example 12

The following procedure can be used to produce a skin engaging member of the type depicted in Figure 4.

5

The extrusion equipment includes two single-screw extruders, a die cross-head, a cooling channel, and a puller. The strip extruded from the extruders is pulled through a cooling tunnel by a Farris puller (a take-off machine) at a speed of approximately 10 feet per minute with minimum tension on the strip. The strip is air-cooled by blowing dry compressed air into the tunnel at approximately 10 CFM. The extrudate is kept in a cool, dry room.

10

The core blend (70% Zytel 330 brand amorphous nylon/blue pigment, 30% ethylene oxide/styrene blend 60/40) is extruded through the first 3/4" Haake extruder (barrel pressure of 4,343 psi and temperature of 180°C). The sheath blend (80% polyethylene oxide/styrene 60/40, 14% polystyrene/white color, 3% PEG, and 3% PVA 2025) is extruded through the second 3/4" Haake extruder (barrel pressure of 6,131 psi and temperature of 180°C). The two materials are then joined and be fed through a cross-head at a temperature of 180°C, die temperature of 180°C, and die pressure of 3,600 psi to form a continuous lubricating strip. The line speed is approximately 10 FPM.

15

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What is claimed is:

- 5 1. A skin engaging member for use in a shaving system of the wet shave type comprising:  
an elongated sheath region comprised of a mixture of a water-soluble shaving aid and a non-water soluble material; and  
a rigid core region extending axially throughout said sheath.
- 10 2. The skin engaging member of claim 1 wherein said water soluble shaving aid is selected from the group consisting of polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, hydroxypropyl cellulose, polyvinyl imidazoline, polyvinyl pyrrolidone, polyacrylamide, hydroxypropyl cellulose, polyethylene glycol, polyvinyl alcohol, methyl cellulose, starch, water-soluble vinyl polymers, polyhydroxyethylmethacrylate, silicone copolymers,  
15 sucrose stearate, vitamin E, panthenol, aloe, essential oils and combinations.
- 20 3. A skin engaging member according to claim 2 wherein said water insoluble materials are selected from the group consisting of nylon, ethylene-vinyl acetate copolymer, polyethylene, polypropylene, polystyrene, polyacetyl and combinations thereof.
- 25 4. A skin engaging member according to claim 3 wherein said sheath comprises from about 70% to about 100% by weight of said water insoluble material and from 0% to about 30% by weight of said water soluble material.
- 30 5. A skin engaging member according to claim 4 further comprising additional sheath components selected from the group consisting of plastisizers, beard softeners, lubricants, shaving aids, fillers, tackifiers, fragrances, antipruritic/counterirritant materials, antimicrobial/keratolytic materials, anti-inflammatory agents, astringents, surfactants, comptibilizers, blowing agents or combinations thereof....
6. A skin engaging member according to claim 5 wherein said release agent is selected from the group consisting of polyethylene glycol, methoxypolyethylene glycol, methylcellulose, carboxypolymethylene and combinations.

7. A skin engaging member according to claim 6 further comprising an elongated skin engaging surface extending at least along a portion of the outer surface of said sheath region.

8. A skin engaging member according to claim 7 wherein said sheath region and said core region are applied via coextrusion.

9. A skin engaging member according to claim 8 wherein said core member and said sheath member are fabricated from materials which exhibit different core and sheath colors wherein upon use, said sheath member will wear along said skin engaging surface to expose said different colored core region thus providing an indication that the skin engaging member has reached its desired life.

10. A shaving system of the wet shave type comprising a blade member, and structure defining an external skin engaging member adjacent the shaving edge of said blade member, said skin engaging member comprised of: an elongated sheath region comprised of a mixture of a water-soluble shaving aid and a non-water soluble material; and, a rigid core region extending axially throughout said sheath.

11. The shaving system of claim 10 wherein said water soluble shaving aid is selected from the group consisting of polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, hydroxypropyl cellulose, polyvinyl imidazonline, polyvinyl pyrrolidone, polyacrylamide, hydroxypropyl cellulose, polyethylene glycol, polyvinyl alcohol, methyl cellulose, starch, water-soluble vinyl polymers, polyhydroxyethylmethacrylate, silicone copolymers, sucrose stearate, vitamin E, panthenol, aloe, essential oils and combinations.

12. A shaving system according to claim 11 wherein said water insoluble materials are selected from the group consisting of nylon, ethylene-vinyl acetate copolymer, polyethylene, polypropylene, polystyrene, polyacetyl and combinations thereof.

13. A shaving system according to claim 12 wherein said sheath comprises from about 70% to about 100% by weight of said water insoluble material and from 0% to about 30% by weight of said water soluble material.

14. A shaving system according to claim 13 further comprising additional sheath components selected from the group consisting of plastisizers, beard softeners, lubricants,

shaving aids, fillers, tackifiers, fragrances, antipruritic/counterirritant materials, antimicrobial/keratolytic materials, anti-inflammatory agents, astringents, surfactants, comptibilizers, blowing agents or combinations thereof...

5           15.     A shaving system according to claim 14 wherein said release agent is selected from the group consisting of polyethylene glycol, methoxypolyethylene glycol, methylcellulose, carboxypolyethylene and combinations.

10           16.     A shaving system according to claim 15 further comprising an elongated skin engaging surface extending at least along a portion of the outer surface of said sheath region.

          17.     A shaving system according to claim 16 wherein said sheath region and said core region are applied via coextrusion.

15           18.     A shaving system according to claim 17 wherein said core member and said sheath member are fabricated from materials which exhibit different core and sheath colors wherein upon use, said sheath member will wear along said skin engaging surface to expose said different colored core region thus providing an indication that the skin engaging member has reached its desired life and/or that the razor has reached its desired life.

20           19.     A process for forming a skin engaging member for use in a shaving system of the wet shave type that comprising the steps of:

          providing a sheath blend of said water insoluble polymeric material and said water leachable shaving aid material;

25           providing a core polymeric blend; and

          coextruding the core and sheath such that the core material is extending axially throughout said sheath.

SHAVING SYSTEM

Mingchih M. Tseng

ABSTRACT OF THE INVENTION

- 10 In accordance with one aspect of the invention, there is provided a shaving unit that comprises at least one blade and a skin engaging member that has a surface for engaging the user's skin adjacent the blade edge. The shaving unit may be of a disposable cartridge type adapted for coupling to and uncoupling from a razor handle or may be integral with a handle so that the complete razor is discarded as a unit when the blade or blades become dulled.
- 15 The blade edge (or edges) cooperate with skin engaging surfaces to defines having geometry. The skin engaging member is comprised of an elongated sheath made of a mixture of water insoluble matrix material and an effective amount of shaving aid material and a rigid core material extending axially through out said sheath. The axial position of the core need not be
- 20 through the central axis.

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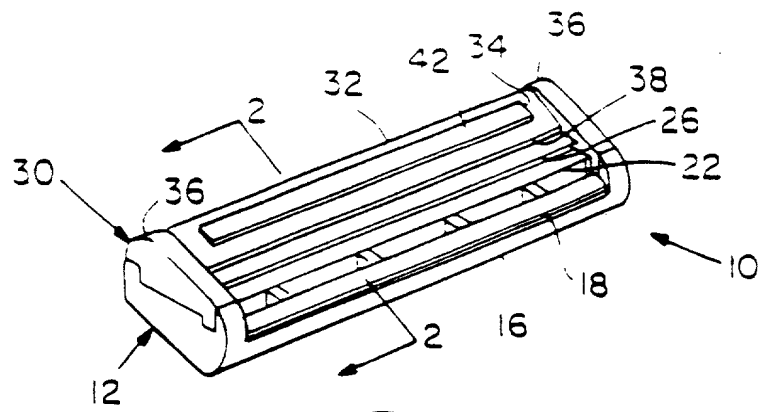


Fig. 1

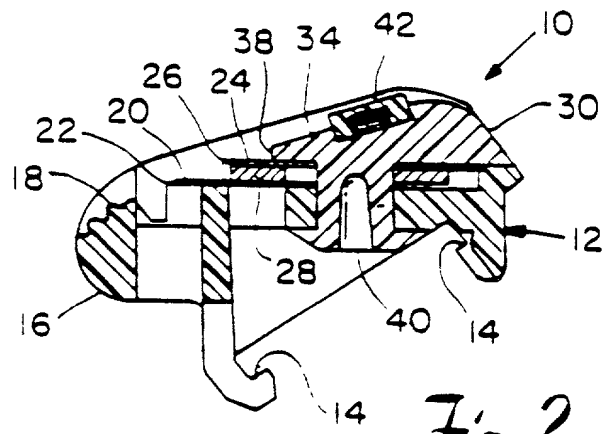


Fig. 2

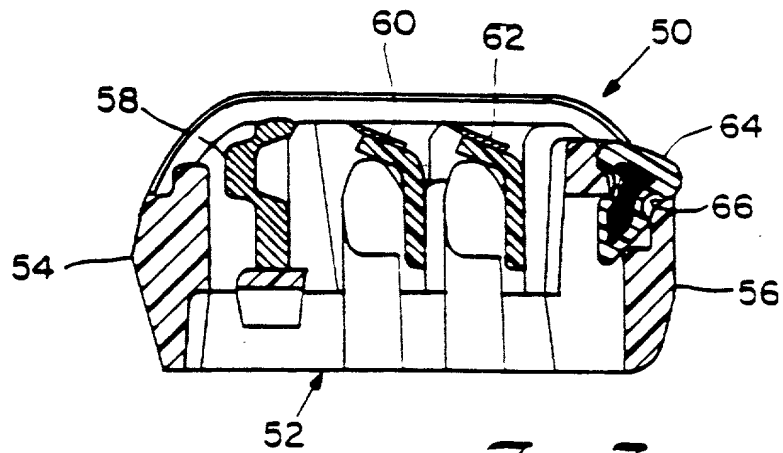


Fig. 3

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FIG. 4

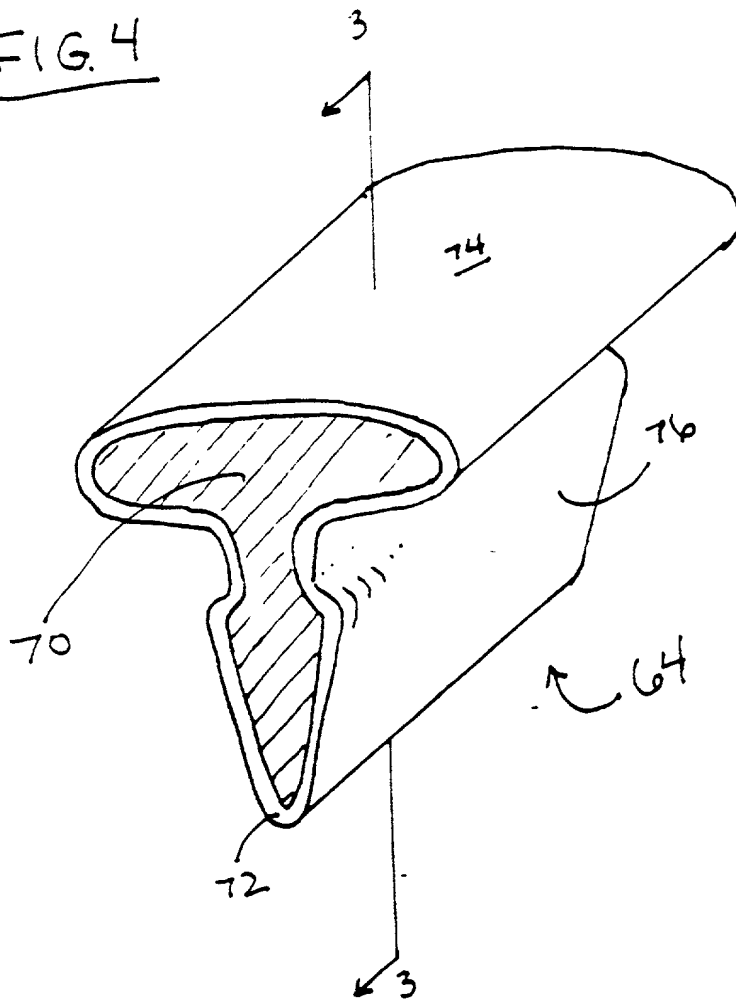


FIG. 5

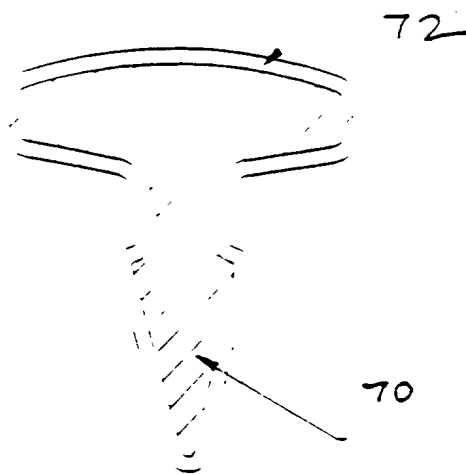


FIG. 6

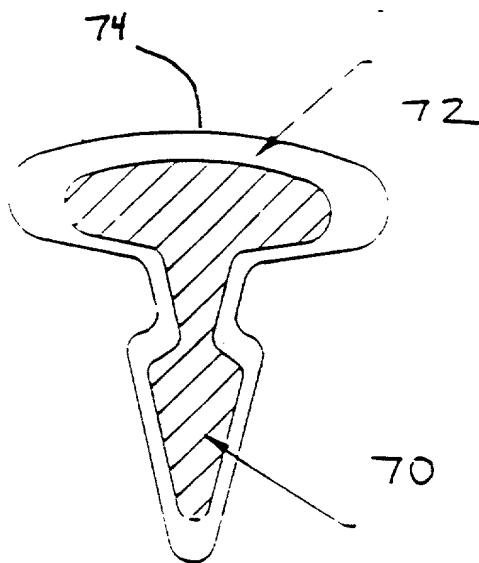
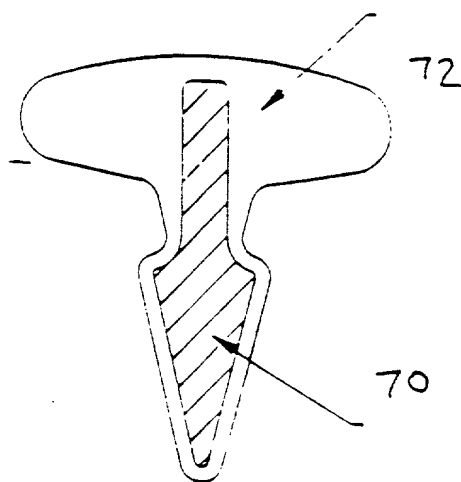


FIG. 7



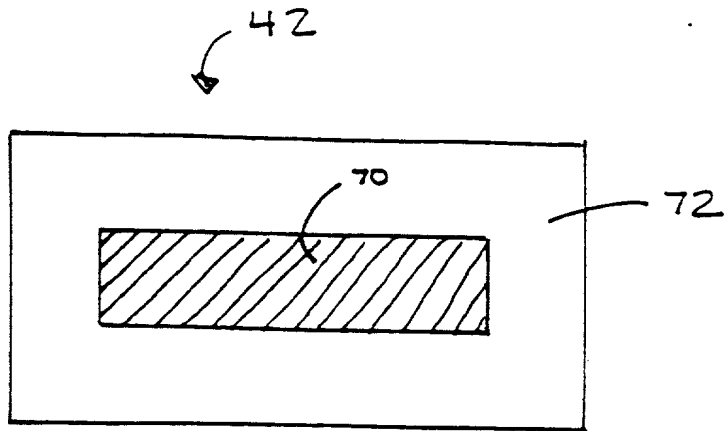
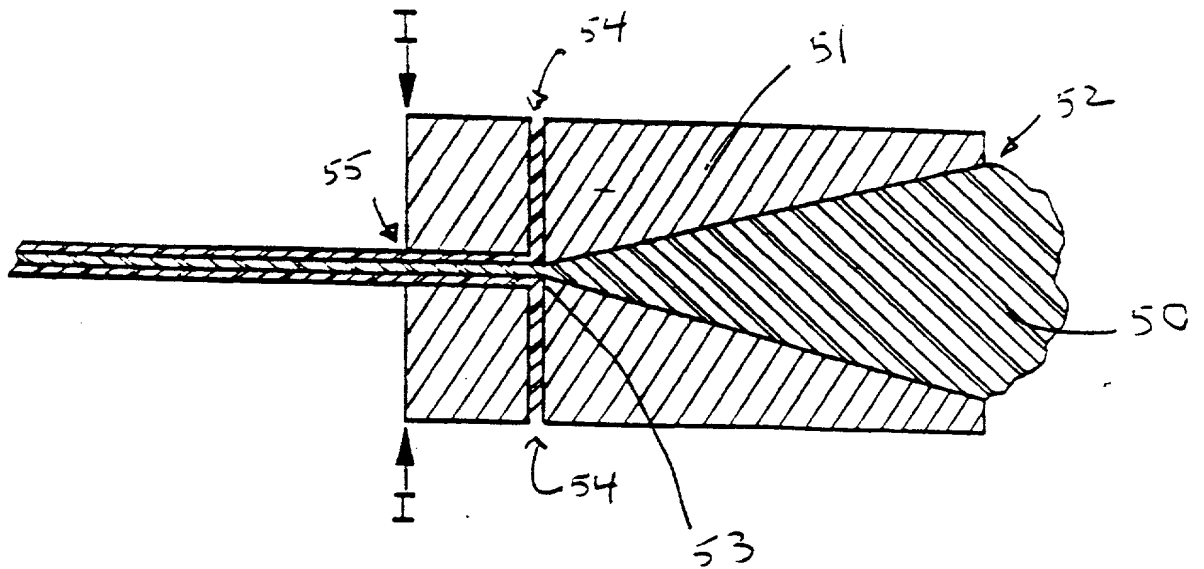


FIG. 8



**FIG. 9**

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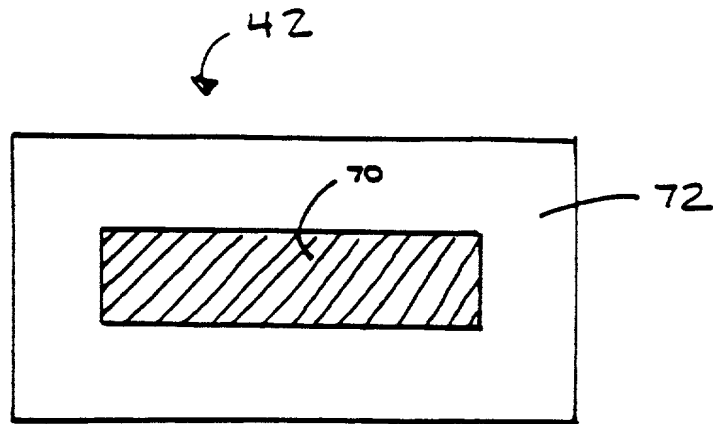
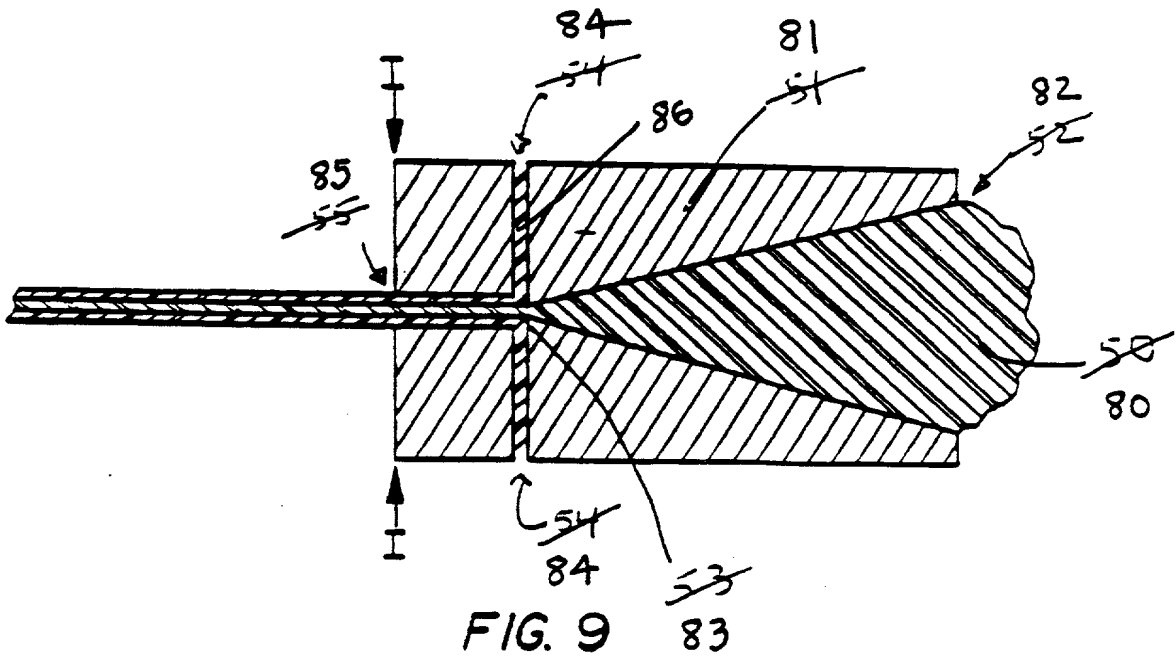


FIG. 8





I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) or PCT application (designating U.S.) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Serial No.  
08/269,495

Filing Date  
July 1, 1994\*

Status  
Pending

\*Provisional filing date September 8, 1994 (awaiting decision on September 7, 1994 petition).

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and to file and prosecute national, international, and regional applications which claim priority from this application:

Donal B. Tobin (Reg. No. 25711)  
Paul I. Douglas (Reg. No. 31244)  
Edward S. Podszus (Reg. No. 35983)

Chester Cekala (Reg. No. 32971)  
Stephan P. Williams (Reg. No. 28546)

Address all correspondence to:

Patent & Trademark Counsel  
The Gillette Company  
Prudential Tower Bldg.  
39th Floor  
Boston, MA 02199

Address telephone calls to Chester Cekala at (617) 421-7851

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Applicant : Mingchih M. Tseng  
Application No. : 08/461,318  
Filed : June 20, 1995  
For : SHAVING SYSTEM  
Group Art Unit : 3204  
Examiner : Charles Goodman

New York, New York  
January 6, 1997

Hon. Assistant Commissioner  
for Patents  
Washington, D.C. 20231

ASSOCIATE POWER OF ATTORNEY

Sir:

The undersigned hereby appoints Douglas A. Cardwell,  
Registration No. 36,472, Associate Attorney with full power to  
transact all business in the Patent and Trademark Office pertaining  
to the above-identified United States patent application.

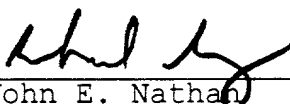
Respectfully submitted,

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WASHINGTON D.C. 20231, on

January 6, 1997  
Thomas Guinanes

Name of Person Signing

Signature of Person Signing

  
\_\_\_\_\_  
John E. Nathan  
Registration No. 26,778  
Richard A. Inz  
Registration No. 31,375  
Attorneys for Applicant  
c/o FISH & NEAVE  
1251 Avenue of the Americas  
New York, New York 10020  
Tel.: (212) 596-9000

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Boston, Massachusetts 02199  
October 8, 1996

Hon. Assistant Commissioner  
for Patents  
Washington, D.C. 20231

ASSOCIATE POWER OF ATTORNEY

Sir:

The undersigned hereby appoints John E. Nathan, Registration No. 26,778, and Richard A. Inz, Registration No. 31,375, Associate Attorneys with full power to transact all business in the Patent and Trademark Office pertaining to the above-identified United States patent application.

The Patent and Trademark Office is respectfully requested to direct all correspondence and telephone calls to:

Richard A. Inz  
c/o FISH & NEAVE  
1251 Avenue of the Americas  
New York, New York 10020-1104  
Tel.: (212) 596-9000.

Respectfully submitted,

Hereby Certify that this  
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17, 1996  
Signature of Person Signing

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Chester Cekala  
Chester Cekala  
Reg. No. 32,971  
Attorney for Applicant  
c/o Patent & Trademark Counsel  
The Gillette Company  
Prudential Tower Bldg., 39th Floor  
Boston, Massachusetts 02199